

Release notes for ENDF/B Development n-093\_Np\_236  
evaluation

**ENDF**  
B-VII.dev

April 26, 2017

- fudge-4.0 Warnings:

1. Missing a channel with a particular angular momenta combination  
*resonances / resolved / MultiLevelBreitWigner (Error # 0): missingResonanceChannel*

WARNING: Missing a channel with angular momenta combination L = 0, J = 4.5 and S = 4.5 for "capture"

2. Potential scattering hasn't converted, you need more L's!  
*resonances / resolved (Error # 1): potentialScatteringNotConverged*

WARNING: Potential scattering hasn't converged by L=0 at E=21.5 eV, xs[0]/xs[0]=100.0% > 0.1%

3. Cross section does not match sum of linked reaction cross sections  
*crossSectionSum label 0: total (Error # 0): CS Sum.*

WARNING: Cross section does not match sum of linked reaction cross sections! Max diff: 0.35%

4. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.  
*Section 1 (n[multiplicity:'energyDependent', emissionMode:'prompt'] + n[emissionMode:'6 delayed'] + gamma [total fission] [nubar]): / Form 'eval': (Error # 0): Condition num.*

WARNING: Ratio of smallest/largest eigenvalue (0.000000e+00) is too small

5. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.  
*Section 2 (n[multiplicity:'energyDependent', emissionMode:'prompt'] + n[emissionMode:'6 delayed'] + gamma [total fission] [nubar]): / Form 'eval': (Error # 0): Condition num.*

WARNING: Ratio of smallest/largest eigenvalue (4.796316e-10) is too small

6. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.  
*Section 3 (total): / Form 'eval': (Error # 0): Condition num.*

WARNING: Ratio of smallest/largest eigenvalue (0.000000e+00) is too small

7. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.  
*Section 4 (n + Np236): / Form 'eval': / Component 0 (Error # 0): Condition num.*

WARNING: Ratio of smallest/largest eigenvalue (0.000000e+00) is too small

8. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.  
*Section 4 (n + Np236): / Form 'eval': / Component 1 (Error # 0): Condition num.*

WARNING: Ratio of smallest/largest eigenvalue (0.000000e+00) is too small

9. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.  
*Section 8 (n[multiplicity:'energyDependent', emissionMode:'prompt'] + n[emissionMode:'6 delayed'] + gamma [total fission]): / Form 'eval': (Error # 0): Condition num.*

WARNING: Ratio of smallest/largest eigenvalue (0.000000e+00) is too small

10. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.  
*Section 10 ( $n + (Np236.e1 \rightarrow Np236 + \gamma)$ ): / Form 'eval': (Error # 0): Condition num.*

WARNING: Ratio of smallest/largest eigenvalue (4.749349e-09) is too small

11. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.  
*Section 11 ( $n + Np236.e2$ ): / Form 'eval': (Error # 0): Condition num.*

WARNING: Ratio of smallest/largest eigenvalue (1.066675e-09) is too small

12. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.  
*Section 12 ( $n + (Np236.e3 \rightarrow Np236 + \gamma)$ ): / Form 'eval': (Error # 0): Condition num.*

WARNING: Ratio of smallest/largest eigenvalue (1.844191e-09) is too small

13. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.  
*Section 13 ( $n + (Np236.e4 \rightarrow Np236 + \gamma)$ ): / Form 'eval': (Error # 0): Condition num.*

WARNING: Ratio of smallest/largest eigenvalue (1.901970e-09) is too small

14. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.  
*Section 14 ( $n + (Np236.e5 \rightarrow Np236 + \gamma)$ ): / Form 'eval': (Error # 0): Condition num.*

WARNING: Ratio of smallest/largest eigenvalue (5.964090e-09) is too small

15. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.  
*Section 15 ( $n + (Np236.e6 \rightarrow Np236 + \gamma)$ ): / Form 'eval': (Error # 0): Condition num.*

WARNING: Ratio of smallest/largest eigenvalue (6.531855e-10) is too small

16. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.  
*Section 16 ( $n + (Np236.c \rightarrow Np236 + \gamma)$ ): / Form 'eval': (Error # 0): Condition num.*

WARNING: Ratio of smallest/largest eigenvalue (0.000000e+00) is too small

17. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.  
*Section 17 ( $Np237 + \gamma$ ): / Form 'eval': / Component 0 (Error # 0): Condition num.*

WARNING: Ratio of smallest/largest eigenvalue (0.000000e+00) is too small

18. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.  
*Section 17 (Np237 + gamma): / Form 'eval': / Component 1 (Error # 0): Condition num.*

WARNING: Ratio of smallest/largest eigenvalue (0.000000e+00) is too small

19. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.  
*Section 18 (n + Np236 [angular distribution]): / Form 'eval': (Error # 1): Condition num.*

WARNING: Ratio of smallest/largest eigenvalue (0.000000e+00) is too small

20. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.  
*Section 19 (n[multiplicity:'energyDependent', emissionMode:'prompt'] + n[emissionMode:'6 delayed'] + gamma [total fission] [spectrum]): / Form 'eval': (Error # 0): Condition num.*

WARNING: Ratio of smallest/largest eigenvalue (0.000000e+00) is too small

21. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.  
*Section 20 (n[multiplicity:'energyDependent', emissionMode:'prompt'] + n[emissionMode:'6 delayed'] + gamma [total fission] [spectrum]): / Form 'eval': (Error # 0): Condition num.*

WARNING: Ratio of smallest/largest eigenvalue (0.000000e+00) is too small

22. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.  
*Section 21 (n[multiplicity:'energyDependent', emissionMode:'prompt'] + n[emissionMode:'6 delayed'] + gamma [total fission] [spectrum]): / Form 'eval': (Error # 0): Condition num.*

WARNING: Ratio of smallest/largest eigenvalue (0.000000e+00) is too small

23. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.  
*Section 22 (n[multiplicity:'energyDependent', emissionMode:'prompt'] + n[emissionMode:'6 delayed'] + gamma [total fission] [spectrum]): / Form 'eval': (Error # 0): Condition num.*

WARNING: Ratio of smallest/largest eigenvalue (0.000000e+00) is too small

- fudge-4.0 Errors:

1. ENDF format insists that all outgoing fission neutrons, delayed or otherwise, have spectra. For delayed neutrons this is tough.  
*Reading ENDF file: ../n-093\_Np\_236.endf (Error # 0): No delayed n dist*

WARNING: More than one delayed fission neutron decay time but no MF = 5 data

2. Duplicate Eout in outgoing distribution  
*Reading ENDF file: ../n-093\_Np\_236.endf (Error # 1): Bad Eout*

WARNING: skipping duplicate e\_out = 6577350.0, i1 = 128 0 1e-05

3. Energy range of data set does not match cross section range  
*reaction label 7:  $n + (Np236\_c \rightarrow Np236 + \gamma) / Product: Np236\_c / Decay product: \gamma\_a / Multiplicity: (Error \# 0): Domain mismatch (a)$*

WARNING: Domain doesn't match the cross section domain: (200000.0 -> 20000000.0) vs (111158.0 -> 20000000.0)

4. Energy range of data set does not match cross section range  
*reaction label 7:  $n + (Np236\_c \rightarrow Np236 + \gamma) / Product: Np236\_c / Distribution: / uncorrelated - angular - isotropic: (Error \# 0): Domain mismatch (a)$*

WARNING: Domain doesn't match the cross section domain: (200000.0 -> 20000000.0) vs (111158.0 -> 20000000.0)

WARNING: Domain doesn't match the cross section domain: (250000.0 -> 20000000.0) vs (111158.0 -> 20000000.0)

WARNING: Domain doesn't match the cross section domain: (250000.0 -> 20000000.0) vs (111158.0 -> 20000000.0)

WARNING: Domain doesn't match the cross section domain: (170000.0 -> 20000000.0) vs (111158.0 -> 20000000.0)

... plus 2 more instances of this message

5. Energy range of data set does not match cross section range  
*reaction label 7:  $n + (Np236\_c \rightarrow Np236 + \gamma) / Product: Np236\_c / Decay product: \gamma\_b / Multiplicity: (Error \# 0): Domain mismatch (a)$*

WARNING: Domain doesn't match the cross section domain: (250000.0 -> 20000000.0) vs (111158.0 -> 20000000.0)

6. Energy range of data set does not match cross section range  
*reaction label 7:  $n + (Np236\_c \rightarrow Np236 + \gamma) / Product: Np236\_c / Decay product: \gamma\_c / Multiplicity: (Error \# 0): Domain mismatch (a)$*

WARNING: Domain doesn't match the cross section domain: (250000.0 -> 20000000.0) vs (111158.0 -> 20000000.0)

7. Energy range of data set does not match cross section range  
*reaction label 7:  $n + (Np236\_c \rightarrow Np236 + \gamma) / Product: Np236\_c / Decay product: \gamma\_d / Multiplicity: (Error \# 0): Domain mismatch (a)$*

WARNING: Domain doesn't match the cross section domain: (170000.0 -> 20000000.0) vs (111158.0 -> 20000000.0)

8. Energy range of data set does not match cross section range  
*reaction label 7:  $n + (Np236\_c \rightarrow Np236 + \gamma) / Product: Np236\_c / Decay product: \gamma\_e / Multiplicity: (Error \# 0): Domain mismatch (a)$*

WARNING: Domain doesn't match the cross section domain: (170000.0 -> 20000000.0) vs (111158.0 -> 20000000.0)

9. Energy range of data set does not match cross section range  
*reaction label 7:  $n + (Np236\_c \rightarrow Np236 + \gamma) / Product: Np236\_c / Decay product: \gamma\_f / Multiplicity: (Error \# 0): Domain mismatch (a)$*

WARNING: Domain doesn't match the cross section domain: (250000.0 -> 20000000.0) vs (111158.0 -> 20000000.0)

10. Calculated and tabulated Q values disagree.  
*reaction label 8:  $n[multiplicity:'2'] + Np235 + \gamma (Error \# 0): Q mismatch$*

WARNING: Calculated and tabulated Q-values disagree: -5564061.88861084 eV vs -5736680. eV!

11. Energy range of data set does not match cross section range  
*reaction label 8:  $n[multiplicity:'2'] + Np235 + \gamma / Product: \gamma\_a / Multiplicity: (Error \# 0): Domain mismatch (a)$*

- WARNING: Domain doesn't match the cross section domain: (6000000.0 -> 20000000.0) vs (5761200.0 -> 20000000.0)
12. Energy range of data set does not match cross section range  
*reaction label 8: n[multiplicity:'2'] + Np235 + gamma / Product: gamma\_a / Distribution: / uncorrelated - angular - isotropic: (Error # 0): Domain mismatch (a)*

WARNING: Domain doesn't match the cross section domain: (6000000.0 -> 20000000.0) vs (5761200.0 -> 20000000.0)

  13. Energy range of data set does not match cross section range  
*reaction label 8: n[multiplicity:'2'] + Np235 + gamma / Product: gamma\_b / Multiplicity: (Error # 0): Domain mismatch (a)*

WARNING: Domain doesn't match the cross section domain: (6000000.0 -> 20000000.0) vs (5761200.0 -> 20000000.0)

  14. Energy range of data set does not match cross section range  
*reaction label 8: n[multiplicity:'2'] + Np235 + gamma / Product: gamma\_b / Distribution: / uncorrelated - angular - isotropic: (Error # 0): Domain mismatch (a)*

WARNING: Domain doesn't match the cross section domain: (6000000.0 -> 20000000.0) vs (5761200.0 -> 20000000.0)

  15. Energy range of data set does not match cross section range  
*reaction label 8: n[multiplicity:'2'] + Np235 + gamma / Product: gamma\_c / Multiplicity: (Error # 0): Domain mismatch (a)*

WARNING: Domain doesn't match the cross section domain: (6000000.0 -> 20000000.0) vs (5761200.0 -> 20000000.0)

  16. Energy range of data set does not match cross section range  
*reaction label 8: n[multiplicity:'2'] + Np235 + gamma / Product: gamma\_c / Distribution: / uncorrelated - angular - isotropic: (Error # 0): Domain mismatch (a)*

WARNING: Domain doesn't match the cross section domain: (6000000.0 -> 20000000.0) vs (5761200.0 -> 20000000.0)

  17. Energy range of data set does not match cross section range  
*reaction label 8: n[multiplicity:'2'] + Np235 + gamma / Product: gamma\_d / Multiplicity: (Error # 0): Domain mismatch (a)*

WARNING: Domain doesn't match the cross section domain: (6000000.0 -> 20000000.0) vs (5761200.0 -> 20000000.0)

  18. Energy range of data set does not match cross section range  
*reaction label 8: n[multiplicity:'2'] + Np235 + gamma / Product: gamma\_d / Distribution: / uncorrelated - angular - isotropic: (Error # 0): Domain mismatch (a)*

WARNING: Domain doesn't match the cross section domain: (6000000.0 -> 20000000.0) vs (5761200.0 -> 20000000.0)

  19. Energy range of data set does not match cross section range  
*reaction label 8: n[multiplicity:'2'] + Np235 + gamma / Product: gamma\_e / Multiplicity: (Error # 0): Domain mismatch (a)*

WARNING: Domain doesn't match the cross section domain: (6000000.0 -> 20000000.0) vs (5761200.0 -> 20000000.0)

  20. Energy range of data set does not match cross section range  
*reaction label 8: n[multiplicity:'2'] + Np235 + gamma / Product: gamma\_e / Distribution: / uncorrelated - angular - isotropic: (Error # 0): Domain mismatch (a)*

WARNING: Domain doesn't match the cross section domain: (6000000.0 -> 20000000.0) vs (5761200.0 -> 20000000.0)

21. Energy range of data set does not match cross section range  
*reaction label 8: n[multiplicity:'2'] + Np235 + gamma / Product: gamma\_f / Multiplicity: (Error # 0): Domain mismatch (a)*

WARNING: Domain doesn't match the cross section domain: (6500000.0 -> 20000000.0) vs (5761200.0 -> 20000000.0)

22. Energy range of data set does not match cross section range  
*reaction label 8: n[multiplicity:'2'] + Np235 + gamma / Product: gamma\_f / Distribution: / uncorrelated - angular - isotropic: (Error # 0): Domain mismatch (a)*

WARNING: Domain doesn't match the cross section domain: (6500000.0 -> 20000000.0) vs (5761200.0 -> 20000000.0)

23. Energy range of data set does not match cross section range  
*reaction label 8: n[multiplicity:'2'] + Np235 + gamma / Product: gamma\_g / Multiplicity: (Error # 0): Domain mismatch (a)*

WARNING: Domain doesn't match the cross section domain: (6500000.0 -> 20000000.0) vs (5761200.0 -> 20000000.0)

24. Energy range of data set does not match cross section range  
*reaction label 8: n[multiplicity:'2'] + Np235 + gamma / Product: gamma\_g / Distribution: / uncorrelated - angular - isotropic: (Error # 0): Domain mismatch (a)*

WARNING: Domain doesn't match the cross section domain: (6500000.0 -> 20000000.0) vs (5761200.0 -> 20000000.0)

25. Calculated and tabulated Q values disagree.  
*reaction label 9: n[multiplicity:'3'] + Np234 + gamma (Error # 0): Q mismatch*

WARNING: Calculated and tabulated Q-values disagree: -12547180.95904541 eV vs -1.27198e7 eV!

26. Energy range of data set does not match cross section range  
*reaction label 9: n[multiplicity:'3'] + Np234 + gamma / Product: gamma\_a / Multiplicity: (Error # 0): Domain mismatch (a)*

WARNING: Domain doesn't match the cross section domain: (13500000.0 -> 20000000.0) vs (12774200.0 -> 20000000.0)

27. Energy range of data set does not match cross section range  
*reaction label 9: n[multiplicity:'3'] + Np234 + gamma / Product: gamma\_a / Distribution: / uncorrelated - angular - isotropic: (Error # 0): Domain mismatch (a)*

WARNING: Domain doesn't match the cross section domain: (13500000.0 -> 20000000.0) vs (12774200.0 -> 20000000.0)

28. Energy range of data set does not match cross section range  
*reaction label 9: n[multiplicity:'3'] + Np234 + gamma / Product: gamma\_b / Multiplicity: (Error # 0): Domain mismatch (a)*

WARNING: Domain doesn't match the cross section domain: (13500000.0 -> 20000000.0) vs (12774200.0 -> 20000000.0)

29. Energy range of data set does not match cross section range  
*reaction label 9: n[multiplicity:'3'] + Np234 + gamma / Product: gamma\_b / Distribution: / uncorrelated - angular - isotropic: (Error # 0): Domain mismatch (a)*

WARNING: Domain doesn't match the cross section domain: (13500000.0 -> 20000000.0) vs (12774200.0 -> 20000000.0)

30. Energy range of data set does not match cross section range  
*reaction label 9: n[multiplicity:'3'] + Np234 + gamma / Product: gamma\_c / Multiplicity: (Error # 0): Domain mismatch (a)*

WARNING: Domain doesn't match the cross section domain: (13500000.0 -> 20000000.0) vs (12774200.0 -> 20000000.0)

31. Energy range of data set does not match cross section range  
*reaction label 9: n[multiplicity:'3'] + Np234 + gamma / Product: gamma\_c / Distribution: / uncorrelated - angular - isotropic: (Error # 0): Domain mismatch (a)*

WARNING: Domain doesn't match the cross section domain: (13500000.0 -> 20000000.0) vs (12774200.0 -> 20000000.0)

32. Calculated and tabulated Q values disagree.  
*reaction label 10: n[multiplicity:'4'] + Np233 + gamma (Error # 0): Q mismatch*

WARNING: Calculated and tabulated Q-values disagree: -18611601.91622925 eV vs -1.87842e7 eV!

33. Energy range of data set does not match cross section range  
*reaction label 10: n[multiplicity:'4'] + Np233 + gamma / Product: gamma\_a / Multiplicity: (Error # 0): Domain mismatch (a)*

WARNING: Domain doesn't match the cross section domain: (19500000.0 -> 20000000.0) vs (18864500.0 -> 20000000.0)

34. Energy range of data set does not match cross section range  
*reaction label 10: n[multiplicity:'4'] + Np233 + gamma / Product: gamma\_a / Distribution: / uncorrelated - angular - isotropic: (Error # 0): Domain mismatch (a)*

WARNING: Domain doesn't match the cross section domain: (19500000.0 -> 20000000.0) vs (18864500.0 -> 20000000.0)

35. Energy range of data set does not match cross section range  
*reaction label 10: n[multiplicity:'4'] + Np233 + gamma / Product: gamma\_b / Multiplicity: (Error # 0): Domain mismatch (a)*

WARNING: Domain doesn't match the cross section domain: (19500000.0 -> 20000000.0) vs (18864500.0 -> 20000000.0)

36. Energy range of data set does not match cross section range  
*reaction label 10: n[multiplicity:'4'] + Np233 + gamma / Product: gamma\_b / Distribution: / uncorrelated - angular - isotropic: (Error # 0): Domain mismatch (a)*

WARNING: Domain doesn't match the cross section domain: (19500000.0 -> 20000000.0) vs (18864500.0 -> 20000000.0)

37. Calculated and tabulated Q values disagree.  
*reaction label 12: Np237 + gamma (Error # 0): Q mismatch*

WARNING: Calculated and tabulated Q-values disagree: 6749967.562744141 eV vs 6577350. eV!

38. Multiplicity does not match sum of linked product multiplicities!  
*multiplicitySum label 8: n + (Np236\_c ->Np236 + gamma) total gamma multiplicity (Error # 0): summedMultiplicityMismatch*

WARNING: Multiplicity does not match sum of linked product multiplicities! Max diff: 21.65%

39. Multiplicity does not match sum of linked product multiplicities!  
*multiplicitySum label 9: n[multiplicity:'2'] + Np235 + gamma total gamma multiplicity (Error # 0): summedMultiplicityMismatch*

WARNING: Multiplicity does not match sum of linked product multiplicities! Max diff: 100.00%

40. Multiplicity does not match sum of linked product multiplicities!  
*multiplicitySum label 10: n[multiplicity:'3'] + Np234 + gamma total gamma multiplicity  
(Error # 0): summedMultiplicityMismatch*

WARNING: Multiplicity does not match sum of linked product multiplicities! Max diff: 78.49%

41. Multiplicity does not match sum of linked product multiplicities!  
*multiplicitySum label 11: n[multiplicity:'4'] + Np233 + gamma total gamma multiplicity  
(Error # 0): summedMultiplicityMismatch*

WARNING: Multiplicity does not match sum of linked product multiplicities! Max diff: 100.00%

42. Calculated and tabulated Q values disagree.  
*fissionComponent label 0: /reactionSuite/fissionComponents/fissionComponent[@label='0']  
(Error # 0): Q mismatch*

WARNING: Calculated and tabulated Q-values disagree: 220815712380.0041 eV vs 1.902335e8 eV!

43. Calculated and tabulated Q values disagree.  
*fissionComponent label 1: /reactionSuite/fissionComponents/fissionComponent[@label='1']  
(Error # 0): Q mismatch*

WARNING: Calculated and tabulated Q-values disagree: 220815712380.0041 eV vs 1.902335e8 eV!

44. Calculated and tabulated Q values disagree.  
*fissionComponent label 2: /reactionSuite/fissionComponents/fissionComponent[@label='2']  
(Error # 0): Q mismatch*

WARNING: Calculated and tabulated Q-values disagree: 220815712380.0041 eV vs 1.902335e8 eV!

45. Calculated and tabulated Q values disagree.  
*fissionComponent label 3: /reactionSuite/fissionComponents/fissionComponent[@label='3']  
(Error # 0): Q mismatch*

WARNING: Calculated and tabulated Q-values disagree: 220815712380.0041 eV vs 1.902335e8 eV!

46. A covariance matrix was not positive semi-definite, so it has negative eigenvalues.  
*Section 18 (n + Np236 [angular distribution]): / Form 'eval': / LegendreLValue L=1 vs  
1 (Error # 0): Bad evs*

WARNING: 11 negative eigenvalues! Worst case = -4.024441e-05

- njoy2012 Warnings:

1. In some evaluations, the partial fission reactions MT=19, 20, 21, and 38 are given in File 3, but no corresponding distributions are given. In these cases, it is assumed that MT=18 should be used for the fission neutron distributions.  
*heatr...prompt kerma (0): HEATR/hinit (3)*

---message from hinit---mt19 has no spectrum  
mt18 spectrum will be used.

2. Recoil is not given, so one-particle recoil approximation used.  
*heatr...prompt kerma (1): HEATR/hinit (4)*  

```
---message from hinit---mf6, mt 16 does not give recoil za= 93235
one-particle recoil approx. used.
```
3. Recoil is not given, so one-particle recoil approximation used.  
*heatr...prompt kerma (2): HEATR/hinit (4)*  

```
---message from hinit---mf6, mt 17 does not give recoil za= 93234
one-particle recoil approx. used.
```
4. Recoil is not given, so one-particle recoil approximation used.  
*heatr...prompt kerma (3): HEATR/hinit (4)*  

```
---message from hinit---mf6, mt 37 does not give recoil za= 93233
one-particle recoil approx. used.
```
5. Recoil is not given, so one-particle recoil approximation used.  
*heatr...prompt kerma (4): HEATR/hinit (4)*  

```
---message from hinit---mf6, mt 51 does not give recoil za= 93236
one-particle recoil approx. used.
```
6. Recoil is not given, so one-particle recoil approximation used.  
*heatr...prompt kerma (5): HEATR/hinit (4)*  

```
---message from hinit---mf6, mt 52 does not give recoil za= 93236
one-particle recoil approx. used.
```
7. Recoil is not given, so one-particle recoil approximation used.  
*heatr...prompt kerma (6): HEATR/hinit (4)*  

```
---message from hinit---mf6, mt 53 does not give recoil za= 93236
one-particle recoil approx. used.
```
8. Recoil is not given, so one-particle recoil approximation used.  
*heatr...prompt kerma (7): HEATR/hinit (4)*  

```
---message from hinit---mf6, mt 54 does not give recoil za= 93236
one-particle recoil approx. used.
```
9. Recoil is not given, so one-particle recoil approximation used.  
*heatr...prompt kerma (8): HEATR/hinit (4)*  

```
---message from hinit---mf6, mt 55 does not give recoil za= 93236
one-particle recoil approx. used.
```
10. Recoil is not given, so one-particle recoil approximation used.  
*heatr...prompt kerma (9): HEATR/hinit (4)*  

```
---message from hinit---mf6, mt 56 does not give recoil za= 93236
one-particle recoil approx. used.
```
11. Recoil is not given, so one-particle recoil approximation used.  
*heatr...prompt kerma (10): HEATR/hinit (4)*

- message from hinit---mf6, mt 91 does not give recoil za= 93236  
one-particle recoil approx. used.
12. Recoil is not given, so one-particle recoil approximation used.  
*heatr...prompt kerma (11): HEATR/hinit (4)*
- message from hinit---mf6, mt102 does not give recoil za= 93237  
photon momentum recoil used.
13. There is a problem with the fission energy release.  
*heatr...prompt kerma (24): HEATR/nheat (3)*
- message from nheat---changed q from 1.902335E+08 to 1.853419E+08  
for mt 18
14. Only partial urr covariance data was given.  
*errorr...produce cross section covariances (0): ERRORR/resprx (5)*
- message from resprx---mf2 nls=1, but mf32 nls=0  
continue with partial urr covariance data
15. No scattering radius uncertainty given.  
*errorr...produce cross section covariances (1): ERRORR/rpxlc12 (0)*
- message from rpxlc12---no scattering radius uncertainty
16. Generic warning message  
*errorr...produce cross section covariances (2): Warning*
- message from rpxlc12---resonance parameter loop done 478.4s
17. Generic warning message  
*errorr...produce cross section covariances (3): Warning*
- message from rpxlc12---sensitivity calculation continues 478.7s
18. Generic warning message  
*errorr...produce cross section covariances (4): Warning*
- message from rpxlc12---sensitivity calculation completed 479.3s

• **xsectplotter** Errors:

1. ENDF format insists that all outgoing fission neutrons, delayed or otherwise, have spectra. For delayed neutrons this is tough.  
*(Error # 2): No delayed n dist*

WARNING: More than one delayed fission neutron decay time but no MF = 5 data

2. Duplicate Eout in outgoing distribution  
*(Error # 3): Bad Eout*

WARNING: skipping duplicate e\_out = 6577350.0, i1 = 128 0 1e-05